Trend Study 1-23-01

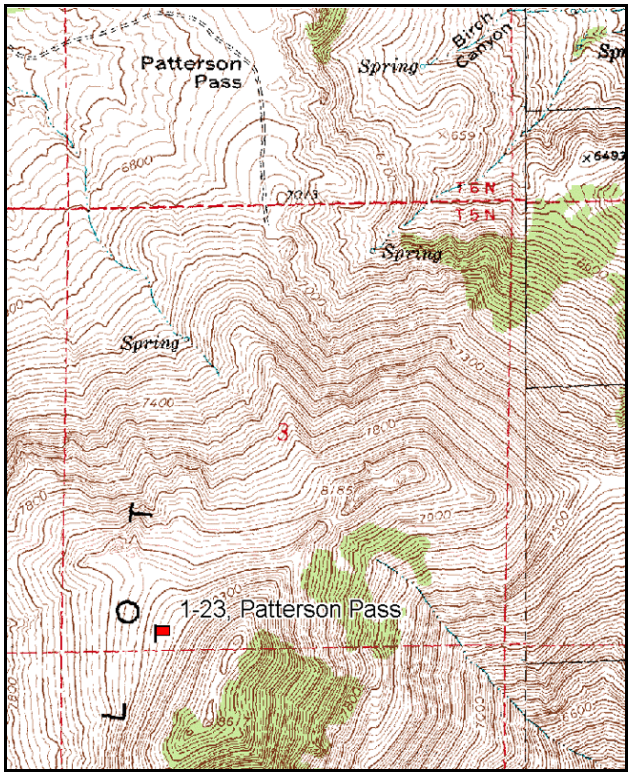
Study site name: Patterson Pass . Vegetation type: Big Sagebrush .

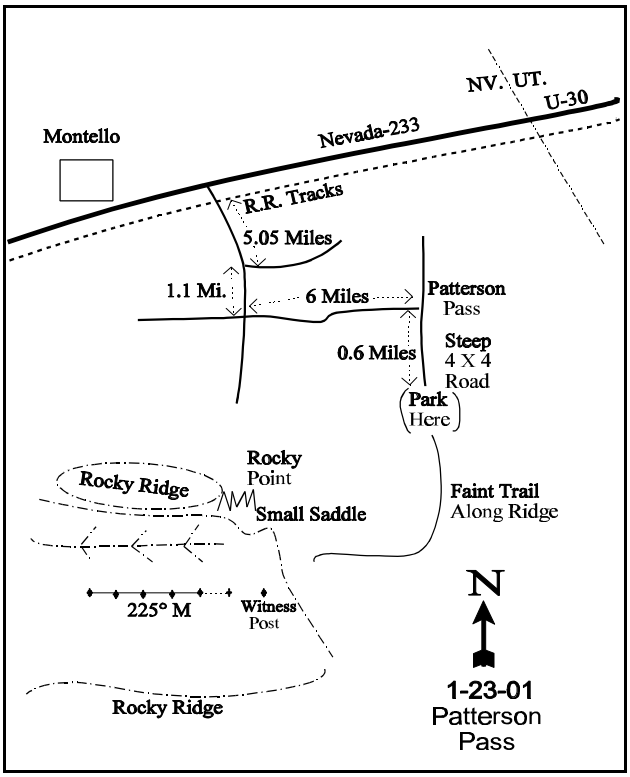
Compass bearing: frequency baseline 225 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). Rebar: belt 1 on 1 ft., belt 2 on 15 ft., belt 3 on 0 ft., belt 4 on 1 ft., belt 5 on 0 ft.

LOCATION DESCRIPTION

Drive 0.5 miles past mile marker 25 on Nevada State Road 233. Turn left and cross tracks and continue straight for 5.05 miles. At this point there will be a road going to the left. Stay right and continue 1.1 miles to a four way intersection. Take a left turn and drive 6 miles to Patterson Pass. Take a right turn and drive 0.6 miles up a steep four wheel drive road. Park here. Walk on a faint trail up the ridge to a saddle. Stay high on the slope. The witness post is in the saddle about 400 ft. from the rocky slope to the east. The 0-foot baseline stake is just a few paces west of the witness post. The baseline runs 225 degrees magnetic.





Map Name: Patterson Pass Diagrammatic Sketch

Township 5N , Range 19W , Section 3 UTM 4562113 N, 246992 E

DISCUSSION

Trend Study No. 1-23

The Patterson Pass study was established in 1996 to monitor an increasing elk population on the Pilot Mountains along the Utah/Nevada border. The area is remote and accessible only by foot. The site has a southwest aspect with a moderate slope of 20% to 25% and an elevation of about 8,160 feet. This area receives concentrated use by elk as indicated by the high pellet group quadrat frequency. Some of the elk pellet groups appear recent, indicating that elk use this area during most of the year then move to lower elevations when the snow gets too deep. Small numbers of deer pellet groups were also encountered. Chuckers were heard on the nearby rocky slopes during study establishment in 1996. The area is within the Lucin/Pilot allotment which is grazed by cattle and sheep. Livestock do not appear to utilize the steeper slopes where the transect is located. A pellet-group transect read on site in 2001 estimated 47 elk days use/acre (116 elk days use/ha). Only 1 deer pellet group was encountered. Two cow elk were seen in the area when the site was read on June 6th of 2001. Most of the elk pellet groups appeared to be 2 to 3 months old. Some fresh pellet groups were also seen along with apparent bedding areas on site.

The soil is moderately shallow with an estimated effective rooting depth of almost 10 inches (see methods). The soil is a clay loam with a neutral soil reaction (6.7 pH). It is extremely rocky with numerous large rocks and boulders on the surface and throughout the profile. Rooting depth is limited in some areas where black sagebrush occurs in isolated pockets, but the deeper rooted mountain big sagebrush, which dominates the site, would indicate a deeper soil. Protective ground cover, in the form of vegetation and litter cover, is abundant and well dispersed. Accelerated erosion is not a problem on the site and the erosion condition class was determined to be in the stable range in 2001.

The site is dominated by a stand of moderately large, vigorous mountain big sagebrush. They accounted for 59% of the browse cover with an estimated population of 5,060 plants/acre in 1996. They now (‘01) account for 69% of the browse cover and have a population of 6,000 plants/acre. The percentage of the population classified as mature plants has gone from 79% up to 93%. Utilization was light to moderate in 1996, and mostly light in 2001. Percent decadency has remained relatively low at 15%. There are more than adequate numbers of seedlings and young to maintain the population. On a more flat area, some of the sagebrush exhibit signs of winter injury. Annual leader growth averaged 1.3 inches in 2001, which was 28% below the average for this unit.

Additional forage is provided by black sagebrush, slenderbush eriogonum, and a few scattered wax current. Black sagebrush occurs in isolated patches where soil depth is obviously limited. The population is in good vigor with mostly light utilization and low percent decadency.

The increaser, mountain low rabbitbrush, is fairly abundant with an estimated density of 3,280 plants/acre in 2001, a 20% decrease from 1996. The majority of the population consist of mature plants. Most plants appear to not be utilized.

The herbaceous understory is abundant and on average makes up 53% of the total vegetative cover. Through the last two sampling periods, there have been 11 grasses and 25 forbs, and on average they produce 35% cover. Grasses are dominated by sheep fescue which accounted for 70% of the grass cover in 1996 and 62% of the grass cover in 2001. Other common grasses include spike fescue and Sandberg bluegrass. Several useful forb species are present including: silvery lupine, bluebell, lambstongue, and hooker balsamroot. Utilization was noted in 1996 on lambstongue and bluebell.

1996 APPARENT TREND ASSESSMENT

Protective ground cover is more than adequate to prevent erosion from occurring. Vegetation and litter cover are abundant and well dispersed leaving little bare soil (3%). The key browse species, mountain big sagebrush appears to have a stable, vigorous population. Black sagebrush also appears stable. Mountain low rabbitbrush is also abundant but the population is mostly mature, indicating that it is not increasing. The herbaceous understory is abundant and provides good forage for elk and deer. Grasses and forbs will likely not increase significantly unless the shrub canopy cover (30%) is reduced.

2001 TREND ASSESSMENT

Protective ground cover is again more than adequate to prevent erosion from occurring. Percent bare soil has actually gone down slightly. The trend for soil would be stable. The key browse species, mountain big sagebrush continues to be a stable and vigorous population. Black sagebrush also appears stable. Mountain low rabbitbrush has actually decreased in abundance, with a population that continues to be mostly mature, indicating that it is not increasing. The herbaceous understory is abundant and provides good forage for elk and deer. The sum of nested frequency for perennial grasses has decreased somewhat, however, the value for perennial forbs increased offsetting this change. Therefore, the herbaceous understory would be considered stable.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 01 , Study no: 23

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Agropyron spicatum	43	24	15	10	.32	.78
G	Elymus cinereus	5	5	1	1	.63	.85
G	Festuca ovina	292	287	89	87	12.97	15.92
G	Koeleria cristata	-	2	-	2	-	.30
G	Leucopoa kingii	110	84	32	28	2.50	4.80
G	Poa fendleriana	47	63	22	23	.77	1.99
G	Poa pratensis	1	-	1	-	.03	-
G	Poa secunda	95	*35	37	14	1.07	.29
G	Sitanion hystrix	3	-	1	-	.00	-
G	Stipa columbiana	-	5	-	1	-	.03
G	Stipa lettermani	11	*28	6	12	.08	.63
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		607	533	204	178	18.40	25.61
Total for Grasses		607	533	204	178	18.40	25.61

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
F	Agoseris glauca	83	*106	31	43	.60	.93
F	Arabis spp.	-	7	-	3	-	.01
F	Astragalus beckwithii	-	2	-	2	-	.01
F	Astragalus utahensis	1	-	1	-	.00	-
F	Balsamorhiza hookeri	5	5	3	3	.01	.06
F	Castilleja spp.	-	-	-	-	-	.00
F	Comandra pallida	7	13	4	6	.07	.18
F	Collinsia parviflora (a)	198	*106	62	37	.86	.75
F	Crepis acuminata	7	*4	4	2	.02	.06
F	Haplopappus acaulis	2	2	1	1	.15	.03
F	Hackelia patens	33	11	11	4	.44	.39
F	Lomatium spp.	-	4	-	2	-	.03
F	Lupinus argenteus	150	153	66	57	4.57	5.04
F	Lygodesmia spinosa	2	-	1	-	.03	-
F	Mertensia oblongifolia	71	70	32	34	.77	.72
F	Microsteris gracilis (a)	-	1	-	1	-	.00
F	Penstemon spp.	3	-	1	-	.00	-
F	Phlox longifolia	188	155	68	60	.81	1.10
F	Polygonum douglasii (a)	6	2	3	1	.04	.00
F	Potentilla pennsylvanica	50	57	27	30	.61	.90
F	Ranunculus spp.	-	*134	-	53	-	1.41
F	Senecio integerrimus	77	60	34	23	1.22	2.09
F	Senecio multilobatus	-	0	-	10	-	.76
F	Sisymbrium altissimum (a)	4	-	2	-	.03	-
F	Taraxacum officinale	31	34	13	16	.35	.28
Total for Annual Forbs		208	109	67	39	0.93	0.76
Total for Perennial Forbs		710	834	297	349	9.69	14.07
Total for Forbs		918	943	364	388	10.63	14.84

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 01 , Study no: 23

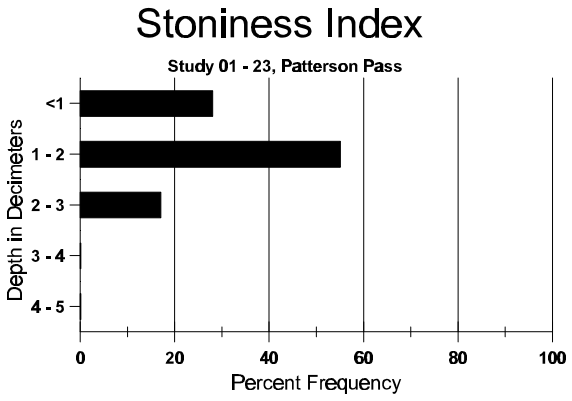
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Artemisia nova	34	27	6.58	3.99
B	Artemisia tridentata vaseyana	85	87	17.79	21.00
B	Chrysothamnus viscidiflorus lanceolatus	74	64	4.60	4.03
B	Eriogonum microthecum	38	29	1.36	.90
B	Pediocactus simpsonii	3	1	-	-
B	Ribes cereum cereum	0	0	-	.38
Total for Browse		234	208	30.35	30.31

BASIC COVER --
Herd unit 01 , Study no: 23

Cover Type	Nested Frequency '96	Nested Frequency '01	Average Cover % '96	Average Cover % '01
Vegetation	443	439	55.85	64.50
Rock	236	185	12.85	9.43
Pavement	94	47	.60	.32
Litter	486	461	61.70	52.75
Cryptogams	3	6	.00	.04
Bare Ground	155	86	3.30	2.31

SOIL ANALYSIS DATA --
Herd Unit 01, Study no: 23, Patterson Pass

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
9.8	53.0 (8.8)	6.7	40.6	33.4	26.0	5.4	36.2	444.8	.5



PELLET GROUP FREQUENCY --
Herd unit 01 , Study no: 23

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'96	'01	01	01
Grouse	-	1	-	-
Elk	58	25	609	47 (116)
Deer	4	1	9	1 (2)

BROWSE CHARACTERISTICS --
Herd unit 01 , Study no: 23

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Artemisia nova																		
S	96	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	96	9	4	-	-	-	-	-	-	-	13	-	-	-	260			13
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	96	49	33	1	-	-	-	-	-	-	83	-	-	-	1660	11	25	83
	01	88	-	-	-	-	-	-	-	-	88	-	-	-	1760	11	20	88
D	96	5	4	-	-	-	-	-	-	-	9	-	-	-	180			9
	01	3	-	-	1	-	-	-	-	-	3	-	-	1	80			4
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	39%	.95%	00%	-10%
'01	00%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	2100	Dec:	9%
'01	1900		4%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	96	17	-	-	-	-	-	-	-	-	17	-	-	-	340			17
	01	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	96	40	3	-	-	-	-	-	-	-	43	-	-	-	860			43
	01	28	1	-	-	-	-	-	-	-	29	-	-	-	580			29
M	96	95	48	26	-	2	-	-	-	-	170	-	1	-	3420	19	33	171
	01	207	20	-	-	-	-	-	-	-	210	-	5	12	4540	19	32	227
D	96	21	16	2	-	-	-	-	-	-	30	-	1	8	780			39
	01	41	2	-	1	-	-	-	-	-	35	-	-	9	880			44
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	400			20
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	420			21

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	27%	11%	04%	+16%
'01	08%	00%	09%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	5060	Dec:		15%
'01	6000			15%

Chrysothamnus viscidiflorus lanceolatus																		
S	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	96	21	-	-	2	-	-	-	-	-	22	-	1	-	460			23
	01	15	-	-	-	-	-	-	-	-	15	-	-	-	300			15
M	96	141	-	-	19	-	-	-	-	-	157	-	3	-	3200	11	16	160
	01	118	-	-	6	-	-	-	-	-	125	-	-	-	2500	9	16	125
D	96	12	8	-	2	-	-	-	-	-	11	-	5	6	440			22
	01	21	1	-	2	-	-	-	-	-	15	-	-	9	480			24
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	04%	00%	07%	-20%
'01	.60%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	4100	Dec:		11%
'01	3280			15%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
Y	96	9	-	-	1	-	-	-	-	-	10	-	-	-	200			10
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	96	40	8	-	7	-	-	1	-	-	56	-	-	-	1120	6	12	56
	01	49	-	-	4	-	-	3	-	-	54	2	-	-	1120	6	13	56

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	12%	00%	00%	-15%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'96	1320	Dec:	-
	'01	1120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pediocactus simpsonii																		
M	96	1	2	-	1	-	-	-	-	-	4	-	-	-	80	7	6	4
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3	3	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	50%	00%	00%	-75%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'96	80	Dec:	-
	'01	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ribes cereum cereum																		
M	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	94	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	37	103	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'96	0	Dec:	-
	'01	0		-